

Attorney Docket No.: DRE-0063
Inventors: Basude et al.
Serial No.: 09/980,134
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This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1: (currently amended) A surface stabilized microbubble formed without surfactant, said microbubble consisting essentially of a microparticle having a hydrophobic surface or an affinity for a specific gas and a gas microbubble formed by introducing a gas into water, a buffer, or blood without surfactant, said gas microbubble attaching to or encapsulating the microparticle.

Claim 2: (previously presented) The surface stabilized microbubble of claim 1 produced by a method comprising:

(a) storing the microparticle in a gaseous environment;
and

(b) introducing the microparticle into water, a buffer, or blood without surfactant so that the microparticle carries with it some gas in which it was stored into the water, buffer, or blood without surfactant so that a gas microbubble forms and attaches to or encapsulates the microparticle.

Claim 3: (previously presented) The surface stabilized microbubble of claim 1 produced by a method comprising:

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(a) storing the microparticle with an affinity toward a specific gas in the specific gas; and

(b) introducing the microparticle into water, a buffer, or blood without surfactant so that the microparticle carries with it some gas in which it was stored into the water, buffer, or blood without surfactant so that a gas microbubble forms and attaches to or encapsulates the microparticle.

Claim 4: (previously presented) The surface stabilized microbubble of claim 1 produced by a method comprising introducing the microparticle having a hydrophobic surface into water, a buffer, or blood without surfactant which contains a dissolved gas thereby creating a surface for the dissolved gas to come out of solution ~~as~~ and form gas microbubbles which attach to or encapsulate the microparticle.

Claim 5: (previously presented) The surface stabilized microbubble of claim 1 produced by a method comprising introducing the microparticle having a hydrophobic surface into water, a buffer, or blood without surfactant which contains gas microbubbles produced by mechanical or chemical means so that gas microbubbles form, and attach to or encapsulate the microparticle.

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Claim 6: (original) A method of enhancing ultrasonic detection in a patient comprising intravenously administering to a patient the surface stabilized microparticle of claim 1 and performing an ultrasound scan on the patient.

Claim 7: (original) The surface stabilized microparticle of claim 1 further comprising a drug within the surface stabilized microbubble.

Claim 8: (original) A method of delivering a drug to a selected site in a patient comprising

(a) administering to the patient the surface stabilized microbubble of claim 7; and

(b) insonating the selected site in the patient so that the surface stabilized microbubble vibrates or ruptures thereby releasing the drug to the selected target site.

Claim 9: (original) The surface stabilized microparticle of claim 1 further comprising a targeting moiety attached to the surface stabilized microbubble.

Claim 10: (currently amended) An ecogenic surface formed without surfactant which enhances ultrasound

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detection of an object, said ecogenic surface consisting essentially of a coating with a hydrophobic surface or a surface with an affinity for a specific gas and gas bubbles formed in water, a buffer, or blood without surfactant which attach to or encapsulate the object to be ultrasonically detected.

Claim 11: (previously presented) The ecogenic surface of claim 10 produced by a method comprising:

(a) storing the object to be ultrasonically detected in a gaseous environment; and

(b) introducing the object to be ultrasonically detected into water, a buffer or blood without surfactant so that the object to be ultrasonically detected carries with it some gas in which it was stored into the water, buffer or blood so that gas microbubbles form and attach to or encapsulate the object to be ultrasonically detected.

Claim 12: (previously presented) The ecogenic surface of claim 10 produced by a method comprising:

(a) storing the object to be ultrasonically detected, said object having an affinity toward a specific gas, in the specific gas; and

(b) introducing the object to be ultrasonically detected into water, a buffer or blood without surfactant so

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that the object to be ultrasonically detected carries with it some gas in which it was stored into the water, buffer or blood without surfactant so that gas microbubbles form and attach to or encapsulate the object to be ultrasonically detected.

Claim 13: (previously presented) The ecogenic surface of claim 10 produced by a method comprising introducing the object to be ultrasonically detected, said object having a hydrophobic surface, into water, a buffer or blood without surfactant which contains a dissolved gas thereby creating a surface for the dissolved gas to come out of solution as gas microbubbles which attach to or encapsulate the object to be ultrasonically detected.

Claim 14: (previously presented) The ecogenic surface of claim 10 produced by a method comprising introducing the object to be ultrasonically detected, said object having a hydrophobic surface, into water, a buffer or blood without surfactant which contains gas microbubbles produced by mechanical or chemical means so that the gas microbubbles can form and attach to or encapsulate the object to be ultrasonically detected.